

Sternal foramina : anatomy and clinical significance

Massimo Guarna¹, Margherita Aglianò¹, Nila Volpi¹, Paola Lorenzoni¹, Daniel Franci¹, Francesca Vannozzi¹

¹ Dipartimento di Scienze Mediche ,Chirurgiche e Neuroscienze - Università degli Studi di Siena

The presence of one or more sternal holes is a congenital developmental anomaly that needs to be recognized and diagnosed to prevent accidental puncture of vital organs during procedures such as sternum biopsy or acupuncture. We present two cases of this bone anomaly characterized by the presence of sternal foramina that were found during tutorials for medical students in the anatomical museum" Leonetto Comparini "of University of Siena . Measurements of the foramina were carried out using a digital caliper and was subsequently made a photographic documentation. The first case shows a sternum with multiple oval foramina: one at level of body sterni with the larger diameter of mm 4,78 and two at xiphoid process with larger diameter of 8,83 and 7,44 mm respectively. The second case is a sternum with a single oval foramen at level of the lower part of body with a diameter of 12,8mm. In the fetus sternum cartilage is formed by two bars which merge with each other towards the eighth week of gestation forming the manubrium and the body of the sternum(1). At the tenth week of gestation .the subsequent ossification of the sternum takes place from six centers of ossification. The last part of the sternum to ossify in adulthood is the xiphoid process . A partial defect in the melting of cartilage bars can cause holes to form in the sternum. The incidence is between 3.1 to 27.4% in dried sterna (2). Sternal holes are observed in the manubrium, body, and in the xiphoid process, also if a highest incidence is verified in the xiphoid process. The presence of sternal holes may cause during sternal puncture the accidental puncture of organs retrosternal as the heart and lungs with possible tamponade or pneumothorax .Moreover knowledge of this anomaly may be important in forensic medicine. The presence of a sternum holes may be mistakenly interpreted as penetrating traumatic injuries or bullet penetration. In conclusion, the recognition of this not uncommon anatomical abnormality is important for radiologists and in clinical and forensic medicine.

References

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Keywords

Foramina, congenital, sternum